



# BiophysTO Lunchtime Seminar Series

## Date

Friday, Nov 10, 2017  
12:00 pm (noon)

## Location

McLennan, MP505  
60 St George street

*Special Seminar*

# Prof. Andrew Rutenberg

Department of Physics  
Dalhousie University

## Anomalously slow transport in single-file diffusion with slow binding kinetics

We computationally study the effects of binding kinetics to the channel wall, leading to transient immobility, on the diffusive transport of particles within narrow channels, that exhibit single-file diffusion (SFD). We find that slow binding kinetics leads to an anomalously slow diffusive transport. Remarkably, the scaled diffusivity characterizing transport exhibits scaling collapse with respect to the occupation fraction  $p$  of sites along the channel. We present a simple “cage-physics” picture that captures the characteristic occupation fraction and the asymptotic dependence on  $p$ . We confirm subdiffusive behavior of tracer particles with slow binding and demonstrate that it is controlled by the same diffusivity as particle transport.

**Host:**

**Dr. Sidhartha Goyal**



**Seminar  
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